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(पहला पुनरीक्षण)

Indian Standard

METAL POLISH, PASTE — SPECIFICATION

(First Revision)

UDC 667·82 : 648·55

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

March 1992 Price Group 2

Polishes Sectional Committee, CHD 023

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Polishes Sectional Committee had been approved by the Chemical Division Council.

Metal polish, paste, is sold in the market in small handy packs of approximately 15 g, which is comparatively much cheaper in price than smallest size pack of liquid metal polish.

The function of the metal polish, paste, is just the same as that of liquid metal polish. Here, the abrasive earth (or polishing earth) and other ingredients are incorporated in a suitable blend of waxes made into paste form with the help of organic solvents.

The standard was first published in 1970 and this revision was taken up based on the experience gained during the last two decades. The Flash Point has been reduced to 30°C, a test for fineness to earth retention and a requirement prohibiting the use of ingredients injurious to health has been added.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

METAL POLISH, PASTE — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for metal polish paste type, which is suitable for general application to copper, brass, zinc, bronze and steel including stainless steel.

2 REFERENCES

The Indian Standards listed below are necessary adjuncts to this standard:

IS No.	*Title*
1070 : 1977	Water for general laboratory use (*second revision*)
1448 (Part 20) : 1982	Flash point by Abel apparatus (*first revision*)
8171 : 1984	Glossary of terms relating to polishes and related materials (*first revision*)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 8171 : 1984 in addition to the following shall apply.

3.1 Ambient Temperature

It is the temperature between 21 and 38°C.

4 COMPOSITION

The polish shall consist essentially of a uniformly distributed and finely divided abrasive (or polishing earth) in a suitable wax blend stable paste. It shall be free from mineral acids, cyanides, grit and other ingredients having detrimental effect on the metals or the containers and shall not cause injury of irritation to human skin.

5 REQUIREMENTS

5.1 Stability and Consistency

5.1.1 The polish shall be smooth, homogeneous semi-solid mass, free from gritty material. It shall not show appreciable shrinkage at edges.

5.1.2 *Cold Test*

It shall pass the 'cold test' prescribed in **A-1.1**.

5.1.3 *Heat Test*

It shall pass the 'heat test' prescribed in **A-1.2**.

5.2 Polishing Properties

5.2.1 The metal polish, paste, shall be easy to apply with a cotton cloth piece and shall rub off easily leaving a shining attractive surface.

5.2.2 The polish shall be so constituted and prepared that by means of application and polishing, this shall not scratch metals, shall not leave the metal discoloured, greasy, or caked with abrasive material.

5.2.3 It shall clean quickly leaving a bright polished surface with full lustre on the polished metal and the surface of metal shall remain free from corrosion or discoloration for a period of 24 hours, when the metal surface is exposed to a clean atmosphere at 65 percent relative humidity at 27° ± 2°C.

5.3 The material shall also comply with the requirements given in Table 1.

Table 1 Requirements for Metal Polish, Paste

Sl No.	Characteristic	Requirement	Method of Test Ref to Cl No. in Annex A
(1)	(2)	(3)	(4)
i)	Abrasive earth content, percent by mass, *Min*	30	A-2
ii)	Waxes and other organic non-volatile matter, percent by mass, *Min*	20	A-3
iii)	Cyanides	To pass test	A-4
iv)	Flash point of volatile matter, °C, *Min*	30	A-5
v)	Fineness of earth retention on 53 micron sieve, percent by mass, *Max*	0·5	A-6

5.4 Acidity of Water Extract

The water extract shall not change blue litmus red when tested as prescribed in **A-7**.

5.5 Keeping Properties

Metal polish furnished under this specification shall conform to the requirements thereof for one year from the date of manufacture when stored in its original sealed containers under cover at ambient temperature.

5.6 The polish shall contain no ingredients which may be injurious to health under normal conditions of use.

6 PACKING AND MARKING

6.1 Packing

6.1.1 The polish shall be supplied in sound, clean and dry push-fit or press-open metal containers or any other suitable containers as agreed to between the purchaser and the supplier. The size of the containers shall be preferably 15 g or as agreed to between the purchaser and the supplier.

6.1.2 The container shall be packed in lots in cartons and the cartons in turn in cardboard boxes.

6.2 Marking

6.2.1 The following information shall be clearly indicated on the outside of the container or the cardboard cartons:

a) Indication of the source of manufacture;
b) Net mass of the polish;
c) Month and year of manufacture;
d) Batch or lot number;
e) The words Metal Polish, Paste, for copper, brass, zinc, bronze and steel including stainless steel; and
f) Safety precautions, if any.

NOTE — Any other marking required under *Weights and Measures (Packaged Commodities) Regulation, 1977* may also be complied with.

7 TEST METHODS

7.1 Tests shall be carried out as prescribed in Annex A and as indicated in **4**.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1977) shall be used in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

8 SAMPLING

Representative samples shall be drawn as prescribed in Annex B.

ANNEX A

(*Clauses* 5.1.2, 5.1.3 *and* 5.4, and *Table* 1)

ANALYSIS OF METAL POLISH, PASTE

A-1 TEST FOR RESISTANCE TO HEAT AND COLD

A-1.1 Cold Test

Maintain the original unopened container of polish at 10 ± 2°C for three hours. Open the lid and examine.

A-1.1.1 No liquid shall separate from the semi-solid mass.

A-1.1.2 The polish shall be smooth to touch and capable of being taken up readily with a cloth piece without crumbling.

A-1.2 Heat Test

Repeat the series of examinations given under **A-1.1** on a container maintained at a temperature of 45 ± 2°C for 3 h.

A-1.2.1 Tilt the container to approximately 30°C angle, the material shall not flow or run.

A-2 DETERMINATION OF ABRASIVE EARTH CONTENT

A-2.1 Procedure

Weigh accurately 10 g of the polish into a previously accurately weighed Whatman's extraction thimble, seamless, 10 mm. Extract the polish with petroleum solvent, 60°C to 80°C, for about 5 h in a soxhlet apparatus Dry the thimble at 100°C to 105°C to constant mass.

A-2.2 Calculation

$$\text{Abrasive earth, percent by mass} = \frac{W_1 \times 100}{W_2}$$

where

W_1 = mass of residue, and
W_2 = mass of polish taken.

A-3 DETERMINATION OF WAXES AND OTHER ORGANIC NON-VOLATILE MATTER

A-3.1 Procedure

Distil over three-fourths of the solvent extract obtained in **A-2.1**. Transfer the content to a tared flat-bottom dish. Evaporate the remaining solvents over water-bath. Keep the dish with the non-volatile matter at 100°C to 105°C till constant mass is obtained.

A-3.2 Calculation

$$\text{Waxes and other organic non-volatile matter, percent by mass} = \frac{W_1 \times 100}{W_2}$$

where

W_1 = mass of residue in dish, and

W_2 = mass of polish taken (*see* **A-2.1**).

A-4 TEST FOR CYANIDE

A-4.1 Procedure

Take 10 g of polish in a 100-ml wide mouth, flat bottom flask and mix it thoroughly with 25 ml of mineral turpentine by warming. Make it alkaline with a few drops of 10 percent sodium hydroxide solution. Add a few drops each of freshly prepared ferrous sulphate and ferric chloride solutions, mix and warm again for 3 to 4 minutes on a water-bath. Acidify the mixture with hydrochloric acid. There shall be no blue coloration in the solution when compared against a blank prepared in a similar way containing 1 ppm cyanide (CN).

A-5 DETERMINATION OF FLASH POINT OF VOLATILE MATTER

A-5.1 Procedure

Take about 200 g of metal polish and distil it under reduced pressure so that the volatile matter fractions are distilled over. Separate the organic solvent from water, if any, present by means of a separating funnel. Shake the solvent with fused calcium chloride or anhydrous sodium or magnesium sulphate. Determine the flash point of the solvent by method B of IS 1448 (Part 20) : 1982.

A-6 TEST FOR FINENESS OF EARTH

A-6.1 Procedure

Weigh accurately about 50 g of the polish in a 250-ml beaker and mix with 100 ml of suitable hydrocarbon solvent, preferably mineral turpentine. Transfer the contents to a 53 micron IS sieve. When the suspension has passed through the sieve, rinse the beaker with additional quantity of the solvent and pour into the sieve, wash the residue remaining on the sieve with further small quantities of the solvent and gently brush with soft camel hair brush until the washings are clear and free from any particles. Dry the sieve alongwith the residue at 105 ± 2°C in a flameproof oven for 4 hours and transfer the dried residue to a tared watch glass and weigh.

A-6.2 Calculation

$$\text{Residue on sieve, percent by mass} = \frac{W_1 \times 100}{W_2}$$

where

W_1 = mass of residue on sieve, and

W_2 = mass of polish taken.

A-7 TEST FOR ACIDITY

A-7.1 Procedure

Mix about 10 g of polish with 100 ml of distilled water. Warm and stir well. Allow to stand till the aqueous layer separates. Test the aqueous layer with litmus paper.

ANNEX B

(*Clause* 8)

SAMPLING OF METAL POLISH PASTE

B-1 GENERAL REQUIREMENTS OF SAMPLING

B-1.0 In drawing, preparing, storing and handling test samples, the following precautions and directions shall be observed.

B-1.1 Samples shall be taken in protected place not exposed to damp air, dust or soot.

B-1.2 The sampling instrument shall be clean and dry when used.

B-1.3 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers from samples from adventitious contamination.

B-1.4 To draw a representative sample, verticle sections of the polish at uniformly placed points shall be taken and mixed as thoroughly as possible by suitable means.

B-1.5 The samples shall be placed in clean, dry and air-tight glass or other suitable containers, on which the material has no action.

B-1.6 The sample containers shall be of such a size that they are almost completely filled by the sample.

B-1.7 Each sample container shall be sealed air-tigh after filling and marked with full details of sampling, the date of sampling and the month and year of manufacture of the material.

B-1.8 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

B-2 SCALE OF SAMPLING

B-2.0 Samples to determine the conformity of a consignment of metal polish, paste to this specification shall be selected so as to be representative of the consignment. Samples drawn in compliance with an agreement between the purchaser and the supplier, to evaluate the various characteristics of the polish, shall be held to be representative of the consignment. In case of dispute, the following sampling inspection scheme is recommended to serve as a guide.

B-2.1 Lot

All the containers in a single consignment of the material drawn from the same batch of manufacture and belonging to the same size, shall constitute a lot. If a consignment is declared or known to consist of different batches of manufacture or of different sizes of containers, the containers belonging to the same batch and size shall be grouped together and each such group shall constitute a separate lot.

B-2.1.1 Samples shall be tested for each lot for ascertaining the conformity of the material to the requirements of this specification.

B-2.2 The number (n) of containers to be chosen from the lot shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 2.

Table 2 Number of Containers to be Selected for Sampling

(*Clauses* B-2.2 *and* B-2.3)

Lot Size (N)	Number of Containers to be Chosen (n)
(1)	(2)
Up to 500	10
501 to 1 000	15
1 001 and above	20

B-2.2.1 In addition to the number of containers chosen in **B-2.2**, an additional number of containers shall be selected for each lot so as to determine consistency and to obtain 200 g of the material for determination of the flash point of the volatile portion of the material.

B-2.3 These containers shall be chosen at random from the lot; in order to ensure the randomness of selection, some random number table as agreed to between the purchaser and the supplier shall be used. In case such table is not available, the following procedure shall be adopted:

> Arrange all the containers in the lot in a systematic manner and starting from any container, count them as 1, 2, 3,......etc, up to r and so on. Every rth container thus counted shall be withdrawn from the lot to give a sample for test, where $r = N/n$, N being the total number of containers in the lot and n the number of containers to be chosen (*see* Table 2). In case r comes out to be a fractional number, its value shall be taken to be equal to the integral part of it.

B-3 PREPARATION OF COMPOSITE TEST SAMPLE

B-3.1 Draw with a cork borer, whose inside diameter is approximately 2 cm, vertical sections of the material from several different points of the surface of the opened containers selected according to **B-2.2**. The total quantity of material drawn from each container shall be the same and shall not exceed 50 g.

B-3.2 Thoroughly mix below 45°C with a mechanical stirrer all the portions of the material drawn from different containers so as to form a composite test sample weighing not less than 100 g.

B-4 NUMBER OF TESTS AND CRITERION FOR CONFORMITY

B-4.1 The consistency shall be determined on unopened containers selected according to **B-2.2.1**. After the determination of consistency about 200 g of the material shall be collected from the containers and shall be used for the determination of flash point of the volatile portion of the sample.

B-4.2 Tests for the determination of other characteristics given in the standard (*see* **3** and Table 1) shall be conducted on the composite sample.

B-4.3 The lot shall be declared as conforming to the requirements of this specification if the test result as obtained under **B-4.1** and **B-4.2** satisfy the corresponding requirements.

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